DAVINCI MEDICAL ACADEMY

ANATOMY IN NUTSHELL

UPPER EXTREMITY

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DAVINCI MEDICAL ACADEMY

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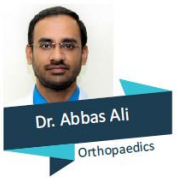
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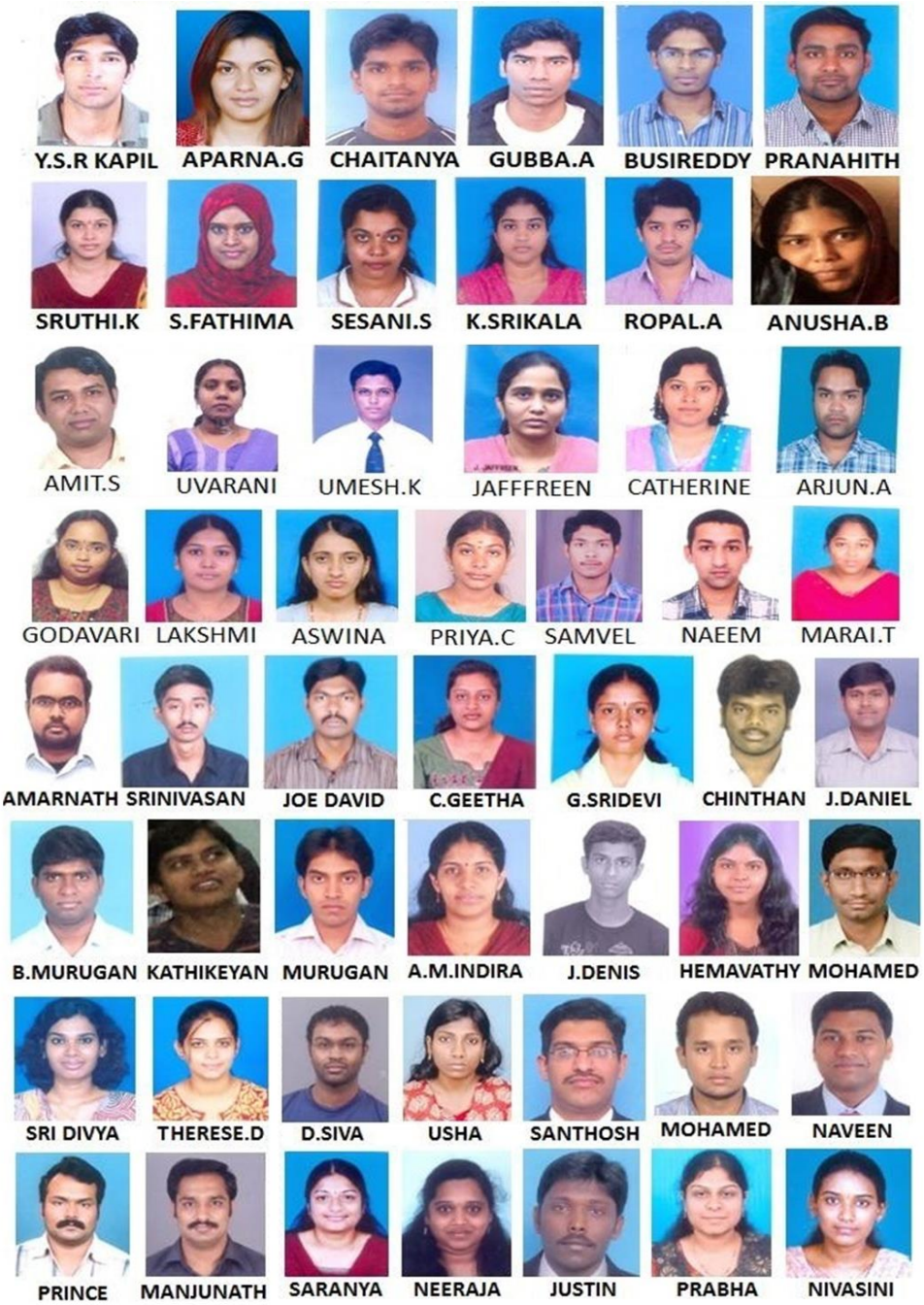

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DAVINCI MEDICAL ACADEMY

UPPER LIMB

BRACHIAL PLEXUS

- The brachial plexus is a network of nerves that provides movement and feeling to the shoulder, arm and hand.
- The nerves supporting the arm exits the spinal column high in the neck and the nerves that support the hand and fingers exit lower in the neck.
- This nerve complex comprises four cervical nerve roots (C5-C8) and the first thoracic nerve root (T1). These roots combine to form three trunks. Each nerve root is derived from the corresponding ventral or primary rami of the spinal nerve. C5-C6 form the upper trunk, C7 continues as the middle trunk and C8-T1 form the lower trunk.
- Each trunk splits and forms a division. Half of them supply flexor muscles (that lift and bend the arm) and the rest supply the extensor muscles (that straighten the arm and bring it down).
    - The anterior divisions of the upper and middle trunk unite to form the lateral cord;
    - The anterior division of the lower trunk continues as the medial cord and all 3 posterior divisions unite forming the posterior cord. The nerve cords derive their names with respect to their relationship with the axillary artery.
    - The lateral cord lies on the lateral (or outer) side of the axillary artery; the medial cord lies on the medial (or inner) side of the axillary artery and the posterior cord lies behind the axillary artery.
- The cords then branch out forming different nerves that supply all of the muscles of the upper extremity.

BRANCHES OF BRACHIAL PLEXUS

A. **Branches of the Roots**:
- Nerve to serratus Anterior (Long Thoracic N of Bell),(C5,C6,C7)
- Nerve to rhomboideus (Dorsal scapular.N),(C5)

B. **Branches of the Trunks**:
- Suprascapular.N (C5,C6)
- Nerve to Subclavius (C5,C6)

C. **Branches of the cords**:
- **Branches of Lateral cord (LML)**
    - ✓ Lateral Pectoral. N(C5 - C7)
    - ✓ Musculo – Cutaneous. N (C5 - C7)
    - ✓ Lateral root of Median. N (C5 - C7)
- **Branches of Medial cord (M_4U)**
    - ✓ Medial Pectoral.N (C8,T1)
    - ✓ Medial Cutaneous. N of arm (C8,T1)
    - ✓ Medial Cutaneous. N of fore - arm (C8,T1)
    - ✓ Medial root of median. N (C8,T1)
    - ✓ Ulnar. N (C7,C8,T1)
- **Branches of Posterior cord (ULNAR)**
    - ✓ Upper Subscapular (C5,C6)
    - ✓ Lower Subscapular (C5,C6)
    - ✓ Nerve to Latissmus dorsi (thoraco-dorsal)(C6,C7,C8)
    - ✓ Axillary. N (C5,C6)

ERB'S PARALYSIS & KLUMPKE'S PARALYSIS:

	ERB'S PARALYSIS	KLUMPKE'S PARALYSIS
Site of Injury	Erb's point (upper trunk of brachial Pl.) Six nerves meet here	Lower trunk of brachial Plexus
Causes of Injury	Undue separation of head from shoulder, as in ✓ Birth Injury ✓ Fall on the shoulder ✓ During Anesthesia	Undue abduction of the arm, as in ✓ Clutching something in hands while falling from a height ✓ May be in birth injuries
Affected roots	Mainly C5,Partly C6	Mainly T1,Partly C8
Muscles Paralyzed	✓ Biceps ✓ Deltoid ✓ Brachialis ✓ Brachio-radialis Partly Supraspinatus, Infraspinatus & Supinator	✓ Intrinsic muscles of the hand ✓ Ulnar flexors of the wrist and fingers
Deformity	Arms: Adducted & Medially Rotated (Hangs by side) Fore - arms: Extended and Pronated	✓ Hyperextension at metacarpo - Phalangeal joint ✓ Flexion at inter - Phalangeal joint" "Claw Hand"

	"Policeman's tip hand" (or) "Porter's tip hand"	
Disability	Loss of movement: • Abduction & lateral rotation of the arm • Flexion & Supination of the fore–arm • Biceps & Supinator jerks are lost • Loss of sensations over a small area over the lower part of deltoid	➢ Claw Hand ➢ Cutaneous anesthesia and analgesia in a narrow zone along the ulnar border of fore - arm &hand ➢ Horner's syndrome ➢ Vasomotor changes skin areas with sensory loss is warmer due to arteriolar dilatation ➢ Trophic changes: Long standing paralysis leads to dry & scaly skin

CLINICAL POINTS

1. In some brachial plexus injuries sympathetic nerve fibers that traverse T1 can be damaged. The condition known as **Horner's syndrome** is caused by damage to the sympathetic nervous system and is often associated with injuries to the brachial plexus network of nerves including Erbs palsy which frequently occurs as a birth injury caused by the use of excessive force during delivery most often by inappropriate traction being applied to the head which damages nerves in the area of the shoulder and neck. Symptoms of Horners syndrome include a drooping upper eyelid, elevation of the lower lid, a constricted pupil, delay in dilation of the pupil, an appearance of a slightly sunken eye and a decrease in sweating on the side of the face affected by the condition with occasional differences in eye colour.
2. The condition in adults known as **'wry neck'** may be described as a temporary form of torticollis **(Twisted Neck)**. Wry neck is often caused by sleeping in an awkward position as a result of which the neck feels painful and stiff since the muscles are in spasm and the head may be held at an angle until spontaneous recovery occurs over a period of a few hours or a few days. The symptoms of torticollis are somewhat similar and this condition can be a birth injury caused by damage to the muscles of the neck during a vigorous and physical birth. Torticollis is usually noticed between 6 months and 3 years of age due to head tilt over one side.

Shoulder joint:

- It's a unstablejoint
- It has a shallow glenoidcavity

MOVEMENTS AT SHOULDER JOINT					
Abductors	**Adductors**	**Flexion**	**Extension**	**Medial Rotation**	**Lateral Rotation**
Supraspinatus($<15^0$) **(Initiation)** Deltoid **(15^0- 90^0)** Serratus anterior & Trapezius **(Over-Head Abduction)**	Pectoralis major Latissmus dorsi **Accessory Muscles**: Teres major Coracho-brachialis Short head of biceps Long head of triceps	Pectoralis Deltoid (Ant.fibres)	Latissmus dorsi Deltoid (Post-fibres)	Pectoralis major Deltoid (Ant.fibres) Teres major Latissmus dorsi	Deltoid (Post-fibres) Teres minor infraspinatus

- Dislocation is common anteriorly. This causes axillary nerve injury as a result.
- **Factors preventing dislocation of shoulder joint**
  - Glenoid labrum-fibrocartilage
  - Rotator cuff
  - Coracoacromian arch
- **Rotator cuff (Musculotendinous cuff):**
  - ➢ Fibrous sheath formed by the four flattened tendons of Subscapularis, Infraspinatus, Teres minor and Supraspinatus (SITS)
  - ➢ Gives strength to the capsule of shoulder joint all around **except inferiorly**
- **I.m. injections in the deltoid should be given in the lower half of the muscle to avoid injury to axillary nerve.**

Elbow joint:

- It's a uniaxial hinge joint

Muscle	Nerve supply	Actions
Biceps brachii	Musculo cutaneous nerve	Supination of the forearm when the elbow is flexed Flexion of elbow and shoulder.
Brachialis **(Hybrid muscle)**	Musculo cutaneous nerve and Radial Nerve	Flexion of elbow joint
Brachioradialis	Radial Nerve	Flexion of elbow joint Pronates the supinated forearm to midprone position.
Supinator	Posterior Interosseus Nerve.	Supination of forearm.

- **Tennis elbow**
  - Tennis Elbow, or lateral epicondylitis, is an orthopedic condition that occurs when the outside of the upper arm near the elbow becomes inflamed and sore due to muscle overuse, which causes the tendons to tear.
- **Golfers elbow**
  - Golfer's Elbow, or medial epicondylitis, is an orthopedic condition that occurs when the anterior tendons of the elbow become inflamed and stressed due to generally injury or overuse.
- **Pulled elbow**
  - Also known as subluxation of radial head/nursemaid's elbow
  - caused by longitudinal traction applied to an extended arm
  - caused by subluxation of the radial head and interposition of the annular (orbicular) ligament into the radiocapitellar joint
  - pain and tenderness localized to the lateral aspect of the elbowon physical examination

Radio ulnar joint

- superior-pivot joint & mobile
- middle-immobile joint/syndesmosis
- inferior-pivot joint joint & mobile

- **Valgus alignment**
  - normal valgus carrying angle (this diminishes with flexion)
    - 7° for males
    - 13° for females
- **Axial loading**
  - in extended elbow
    - loading of 40% of weight is through ulnohumeral joint
    - loading of 60% of weight is through radiohumeral joint

4 MAJOR NERVES OF THE ELBOW

- Musculocutaneous nerve (lateral cord of the brachial plexus)
  - ✓ innervates elbow joint
  - ✓ it supplies the biceps and brachialis
    - the nerve runs between these muscles
    - it exits laterally, distal to the biceps tendon
    - it will terminate as the LABC (forearm), which is found deep to the cephalic vein
- Radial nerve (posterior cord of the brachial plexus)
  - ✓ it leaves the triangular interval (teres major, long head of triceps and humeral shaft)
  - ✓ found in spiral groove 13 cm above the trochlea
  - ✓ pierces lateral intermuscular septum 7.5 cm above the trochlea
    - this is usually at the junction of the middle and distal third of the humerus
    - lies between the brachialis and the brachioradialis
  - ✓ distally it is located superficial to the joint capsule, at the level of the radiocapitellar joint

- Median nerve (medial/lateral cords of the brachial plexus)
  - ✓ it courses with brachial artery, running from lateral to medial
    - lies superficial to brachialis muscle at level of elbow joint
  - ✓ it gives branches to elbow joint
  - ✓ it has no branches in upper arm
- Ulnar nerve (medial cord)
  - ✓ runs medial to brachial artery, pierces medial intermuscular septum (at the level of the arcade of Struthers) and enters posterior compartment
  - ✓ it traverses posterior to the medial epicondyle through the cubital tunnel
  - ✓ it gives branches to elbow joint
  - ✓ it has no branches in upper arm
    - first motor branch to FCU is found distal to the elbow joint

BLOOD SUPPLY OF ELBOW

- Brachial artery
  - is located medially in the upper arm
  - it enters cubital fossa laterally
    - contents-- biceps tendon (lateral), brachial artery, median nerve (medial)
    - lateral border--brachoradialis
    - medial border--pronator teres
    - proximal border --distal humerus
  - at the level of elbow it splits into the radial and ulnar arteries
- Principle branches
  - superior/inferior ulnar collateral
  - nutrient/muscular
  - supratrochlear

FOREARM

- The forearm is divided into two compartments
  - a ventromedial or flexor compartment
  - a dorsolateral or extensor compartment.
- Muscles of the forearm segregate into these compartments consisting of
  - (1) an anterior group (the flexors of the wrist and fingers and the pronators)
  - (2) a posterior group (the extensors of the wrist and fingers and the supinator)
- Muscles of anterior forearm
  - Superficial – 4 muscles
  - Intermediate – 1 muscle
  - Deep- 3 muscles
- Superficial group - arises mostly from a common flexor tendon that attaches to the anterior part of the medial epicondyle of the humerus, and from adjacent fascia. These muscles are supplied chiefly by the median nerve
  - Pronator teres (**pierced by median nerve**)
  - Flexor carpi radialis
  - Plamaris longus
  - Flexor carpi ulnaris
- Intermediate muscle- arises from this common tendon and along the anterior surface of the ulna and radius and is also supplid by the median nerve.
  - Flexor digitorum superficialis
- Deep group - is supplied mostly by a branch of the median nerve(the anterior interosseous nerve)
  - Flexor pollicis longus
  - Flexor digitorum profundus
  - Pronator quadratus

NOTE

- Those muscles in the superficial and deep groups that are not innervated by the median (i.e., the flexor carpi ulnaris and the ulnar part of the flexor digitorum profundus) are supplied by the ulnar nerve.

CLINICAL EDGE

- **Volkmann's ischemic contracture**
  - Increased pressure in the anterior compartment of the forearm, like in an instance, injury to the brachial artery near the elbow (e.g., from a supracondylar fracture of the humerus) can prevent normal blood flow to the compartment and ischemic damage to the deep flexors (pollicis longus and digitorum profundus).
  - This can cause muscle scarring, with flexion deformity of the wrist and fingers

KEY NOTE

- Flexion at elbow- by all superficial muscles
- Flexion at wrist- flexor carpi radilis,flexor carpi ulnaris and Palmaris longus
- Flexion at finger – flexor digitorum superficialis and flexor digitorum profundus
- Pronation- prontor teres and pronator quadratus

Muscles of the posterior forearm

- Five superficial muscles
- Two intermediate muscles
- Five deep muscles
- **Superficial group-** arises mostly from the posterior aspect of the lateral epicondyle of the humerus by a common tendon. These muscles are supplied by Radial nerve or its deep branch, which continues as the posterior interosseous nerve.
  - Brachioradialis (keeps hand in midprone position)
  - Extensor Carpi Radialis Longus
  - Extensor Carpi Radialis Brevis
  - Extensor Carpi Ulnaris- The insertion of the extensor carpi radialis brevis into the base of the third metacarpal is a common site for the development of a **"ganglion"**
  - Anconeus (helps in screwing movement)
- **Intermediate muscles**
  - extensor digitorum
  - extensor digiti minimi
- **Deep muscles**
  - Abductor Pollicis Longus
  - Extensor Pollicis Longus
  - Extensor Pollicis Brevis
  - Extensor Indicis
  - Supinator (**pierced by radial nerve**)

KEY NOTE:

- Muscles helping in supination- supinator, biceps brachii,brachioradialis
- Paralysis of extensor muscle leads to wrist drop + finger drop

PALM

- **Thenar Muscles of the Hand** These are all supplied by the recurrent branch of the median nerve and together their synergistic actions lead chiefly to opposition of the thumb, which is its most important movement.
- The thenar eminence contains three muscles
  - The abductor pollicis brevis-
    - "short thumb abductor"
    - supplied by the median nerve
    - Among peripheral nerve entrapments, entrapment of the median nerve is the most common which occurs at the wrist. Since this entrapment occurs from swelling and inflammation of the tissues in the "Carpal Tunnel" this entrapment condition is known as Carpal Tunnel Syndrome.

        - During severe and prolonged cases atrophy of the abductor pollicis brevis can occur along with the other muscles of the thenar eminence supplied by the median nerve, severely limiting movement of the thumb.
    - Flexor pollicis brevis
        - causes flexion of the thumb
        - Its superficial part originates from the distal border of the flexor retinaculum and the tubercle of the trapezium.
        - The deeper part originates from the capitate and trapezoid bones.
    - Opponens pollicis
        - It flexes and abducts the first metacarpal joint with medial rotation at the hand

Hypothenar Muscles of the Hand-

- These muscles are supplied by the ulnar nerve
    - abductor digiti minimi-
        - assists with flexion of the fifth metacarpal joint
        - originates on the pisiform, the pisohamate ligament, and the flexor retinaculum.
        - inserts on the medial side of the base of the proximal phalanx of the little finger.
    - flexor digiti minimi brevis
    - opponens digiti minimi

Interossei Muscles of the Hand

- There are seven interossei muscles, with two layers: three palmar and four dorsal.
- Palmar Interossei Muscles
    - four palmar interossei muscles between the metacarpals, one going to the thumb, index, ring, and little fingers. These muscles help in adduction of the fingers.
    - The first palmar interossei of the thumb also assists the flexor pollicis brevis with flexion of the thumb.
    - The remaining three also assist the lumbricales in flexing the metacarpophalangeal joint and extending both interphalangeal joints
- Dorsal Interossei Muscles
    - There are four muscle, each originating from two heads, one for each side of the adjacent metacarpal bones of the index, middle, ring and little finger.
    - These muscles abduct the fingers and also assist the lumbricals in flexion and extension of the joints

PAd DAb

- This mnemonic recalls the function of the palmar and dorsal interossei:
    - **P:** palmar interossei
    - **Ad:** adduction
    - **D:** dorsal interossei
    - **Ab:** abduction

Lumbricals

- four slender muscles resemble an earthworm in shape, size and color.
- highly active during any activity requiring active extension of the interphalangeals
- used to place the fingers into the writing position

FOAL

- This mnemonic recalls the four intrinsic muscles of the hand innervated by the **median nerve**, whereas all the other intrinsic muscles are ulnar nerve:

- **F:** flexor pollicis brevis
- **O:** opponens pollicis
- **A:** abductor pollicis brevis
- **L:** lateral two lumbricals

The shoulder and axilla

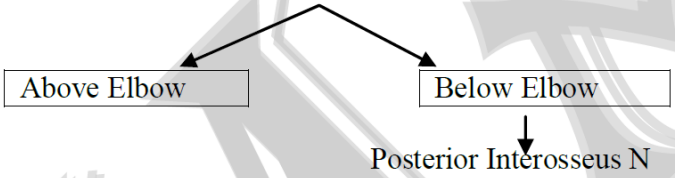
Muscles of pectoral region- They are all supplied by branches of the brachial plexus

- pectoralis major- functions mainly as an adductor of the arm and aids in throwing, pushing, and shoveling.
- pectoralis minor- covers the second part of the axillary artery.
- subclavius
- serratus anterior-
    - rotates the scapula so that the inferior angle moves laterally which helps in abduction of the arm above the horizontal plane.
    - pulls the scapula anteriorward in throwing and pushing.
    - Innervated by long thoracic nerve / nerve of bell.
    - Damage to ths nerve can lead to Paralysis of the serratus anterior which is characterized by "winging" of the scapula
- The pectoralis major is inserted into the humerus, the others into the shoulder girdle.

Nerves of upper limb

- Radial N (C5, 6, 7, 8, T1) arises **RADIAL NERVE** from the posterior cord of brachial plexus.
- In the lower part of axilla, the third part of the axillary artery is related anterior to the radial Nerve.
- The upper lateral cutaneous nerve of the arm supplies the skin covering the lower half of the deltoid and upper part of the long head of the triceps.

Branches of Radial Nerve:



- **Above spiral grove**
    - Triceps
    - Posterior cutaneous Nerve of arm
- **In Spiral groove (sensory):**
    - Posterior cutaneous nerve of forearm
    - Lateral cutaneous N of arm
    - Anconeus
    - Medial& lateral heads of triceps
- **Between spiral groove & lateral epicondyle:**
    - Brachialis
    - Brachio - radialis
    - Extensor carpi radialis longus

TYPE OF RADIAL NERVE LESION			
Above spiral groove	**Between spiral groove & lateral epicondyle**	**Below the elbow**	**Post. Interosseus Nerve Palsy**
Total Palsy	Elbow Extension spared	Elbow & wrist extension spared	Elbow, wrist, I.P Joint extension & sensation spared

Salient Points:

- Autonomous Zone for radial Nerve is dorsum of first space.
- Associated Injuries
    - Crutch Palsy
        - ✓ dislocation of humerus
    - Wrist drop
        - ✓ Shaft of humerus
    - Saturday night palsy
        - ✓ Acute compression injury in spiral groove.

ULNAR NERVE

C7, C8, T1

- Also called musician's nerve.
- Arises from the medical cord of brachial plexus.

Sensory Supply:

Palm: Ant → medial 1/3 of palm;
Post → medial 1/2 of palm.

Digits: Ant → medial 1 ½ digits;
Post → medial 2 ½ digits.

Motor Supply:

Forearm: Flexor carpi ulnaris & Medial 1/2 of flexor digitorum profundus.

Hand:

- ✓ Hypothenar muscles
- ✓ Thenar muscles
- ✓ Four palmar interossei & four dorsal interossei.
- ✓ Medial two lumbricals (3rd & 4th).

Injuries to Ulnar Nerve:

- In low ulnar palsy, forearm muscles are spared but clawing will be more (**ulnar paradox**).
- Grip is weak in ulnar nerve palsy as it supplies the intrinsic muscles.
- **Cubitus valgus** (due to humerus)

Tests to detect ulnar palsy:

- Book test (**froment sign**)
- Card test (to test **P**almar interossei) **-Ad**duction of fingers **(PAD)**
- **Egawa's test** (to test **D**orsal interossei)- **Ab**duction of fingers **(DAB)**
- Ulnar claw hand

Salient Points:

- Tip of little finger is the autonomous zone for ulnar N.
- Entrapment of ulnar-N leads to cubital tunnel syndrome
- All the Intrinsic muscles of hand are supplied Ulnar N (C7, C8, T1) except 1st & 2nd lumbricals and muscles of thenar eminence
- The 1st and 2nd lumbricals are supplied by Median N (C8, T1) It also supplies the muscles of thenar eminence

MEDIAN NERVE

C5, C6,C7, C8,T1

- Also called labourer's nerve
- Comes from the branches of medial and lateral cord of brachial plexus.
- It does not have any branches to axilla & arm.

Sensory Supply

- Palmar aspect:- Lateral half of Palm & Lateral $3^{1/2}$ fingers
- Dorsal aspect: - distal part of later 31/2 fingers

Motor Supply

Forearm: All flexors except flexor carpi ulnaris and medial half of flexor digitorum profundus

Hand: Ist two lumbricals (1st & 2nd lumbricals) Thenar muscles except adductor pollicis (Supplied by ulnar nerve)

Injuries to Median nerve:

Injury at elbow

- Pointing Index (detected by Ochsner clasping test)
- Simian/Ape thumb deformity (Thenar muscles wasted)
- Pen test

Injury at wrist: Abduction & Opposition of thumb is lost.

Salient Points:

- Median Nerve- Commonly injured in cut injury at flexor retinaculum.
- Commonly gets involved in entrapment neuropathy (carpal tunnel syndrome)

Muscles Producing Flexion at the wrist joint:

- Flexor carpi radialis (Median N)
- Flexor carpi ulnaris(Ulnar N)
- Palmaris longus (Median N)

Points to be noted:

- **Structures passing superficial to flexor retinaculum** are ulnar nerve and vessels, Palmaris longus tendon, palmar cutaneous branches of ulnar & median nerve.
- **Structures passing through carpal tunnel** are FDP, FDS, FPL, median nerve.
- **Ulnar nerve passes through cubital tunnel behind the elbow.**
- Ulnar nerve enters the palm passing superficial to flexor retinaculum (transverse carpal ligament) lying just lateral to pisiform. Here ulnar nerve & artery lie under cover of a fascial band called as **volar carpal ligament**, the space under it is known as **volar carpal ligament**, the space under it is known as **ULNAR TUNNEL**.
- Deep terminal br.of ulnar nerve passes through **Guyon's canal (pissohammate tunnel)** under cover of pisso hammate ligament.
- Structure passing through tarsal tunnel is posterior tibial nerve.
- **Peculiarities of the Clavicle** –
  - It is the first bone in the body to ossify (between 5th and 6th week of intrauterine life).
  - Only long bone, which ossifies in membrane.
  - Only long bone which has two primary centres of ossification.
  - Only long bone, which lies horizontally.
  - Generally said to have no medullary cavity and it is subcutaneous throughout.
  - The clavicle is often fractured at the junction of its lateral and middle one-third, for this is its weakest part.
  - Angle of humeral torsion is 164° (Angle of femoral torsion is – 15°)
  - Three nerves are directly related to the humerus and are therefore liable to injury;
    - ✓ **the axillary N.at the surgical neck,**
    - ✓ **the radial N.at the radial groove**
    - ✓ **the ulnar N.behind the medial epicondyle.**
  - Growing end of the humerus is the upper end; (femur – lower end).
  - The humerus and scapula ossify from one primary and seven secondary centres (P7S).
  - Proximal row of carpal bones are (from lateral to medial side) –
    - ✓ Scaphoid, Lunate, Triquetral, Pisiform
  - Distal row contains(from lateral to medial side) –
    - ✓ Trapezium, Trapezoid, Capitate, Hammate
  - **The Capitate is the largest of the carpal bones** (scaphoid is largest in the proximal row)
  - **Pisiform is a sesamoid** bone lying within the tendon of the flexor carpi ulnaris.
  - The carpal bones are usually cartilaginous at birth.
  - The first carpal bone to ossify is the Capitate and the last to ossify is pisiform
  - **Scaphoid is the most frequently fractured of the carpal bones**.
  - The first metacarpal is shortest and stoutest, second metacarpal is the longest, third metacarpal has a Styloid process.
  - All the intrinsic muscles of the palm are supplied by ulnar nerve except **[LOAF]**:
    - ✓ First & Second **L**umbricals.
    - ✓ **O**pponens Pollicis.
    - ✓ **A**bductor pollicis brevis.
    - ✓ **F**lexor pollicis brevis[Superficial head]

SALIENT POINTS CUBITAL FOSSA:

- **Triangular Depression On The Anterior Aspect Of Elbow**

BOUNDARIES

- Base- line drawn between the epicondyles of the humerus
- Lateral boundary-brachioradialis
- Medial boundary- pronator teres
- Apex- where the medial and lateral boundary meet

CONTENTS

- Medial cubital vein
- Brachial artery
- Tendon of the biceps

AXILLA:

- **Pyramidal space between the upper lateral chest and the inner side of the arm**
- **BOUNDARIES**
  - ✓ Apex –(between the clavicle,scapula and 1st rib)
  - ✓ Base-(axillary fascia)
  - ✓ Anterior (pectoralis major and minor muscles)
  - ✓ Posterior(subscapularis,latissimus dorsi and teres major)
  - ✓ Medial- (first 4 ribs and serratus anterior muscle)
  - ✓ Lateral-(bicepetal groove of the humerus)
- **CONTENTS**
  - ➢ Axillary lymph nodes
  - ➢ Axillary artery /vein
  - ➢ Brachial plexus
- Hollow of the armpit- formed by the traction on axillry fascia (suspended from the fascia around the pectoralis minor)
- **Spaces of shoulder:** Three important spaces of the shoulder that are bordered by the triceps include

1. Triangular Space

- **Borders**
  - inferior: teres major
  - lateral: long head of triceps
  - superior: lower border of teres minor
- **Contents**
  - scapular circumflex artery

2. Quadrangular Space

- **Borders**
  - medial: long head of triceps
  - lateral: humeral shaft
  - superior: teres minor
  - inferior: teres major
- **Contents**
  - axillary nerve
  - posterior humeral circumflex artery

3. Triangular Interval

- **Borders**
  - superior: teres major
  - lateral: lateral head of the triceps or the humerus
  - medial: long head of the triceps
- **Contents**
  - profunda brachii artery
  - radial nerve

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